SECTION 5

WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING

5.1 WATER SUPPLY RELIABILITY

Requirement

#5. An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions (10620(f)).

The Montebello Land and Water Company (ML&WC) serves customers exclusively with groundwater from Central Basin. Although this source is deemed reliable and adequate, ML&WC practices rigorous water conservation programs to maximize the available supply. ML&WC currently does not import water and no purchases are planned for the future. Recycled water from Central Basin Municipal Water District (CBMWD) will be utilized for irrigation at Henry Acuna Park, following the completion of the Southeast Water Reliability Project (SWRP) Phase 1. This will further reduce the demand for potable water. There are also conservation programs designed to encourage customers to reduce their water consumption, which are discussed in Section 6.

Requirement

#23. For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable (10631(c)(2)).

Since imported water does not contribute to the supply mix, ML&WC relies solely on the quality and availability of groundwater from the Central Basin. During the recent drought years, ML&WC was able to meet demands through its Allowed Pumping Allocation (APA) and leases. Presently, there are no immediate threats to the quality of water, and groundwater supply is deemed sufficient and reliable. A more detailed discussion of water quality is discussed later in this section.

Table 5-1 (DWR Table 29) lists the factors that could affect the consistency of water supply.

Table 5-1 (DWR Table 29)
Factors resulting in inconsistency of supply

Water supply sources[1]	Specific source name, if any	Limitation quantification	Legal	Environmental	Water quality	Climatic	Additional information
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Units (circle one): acre-feet per year million gallons per year cubic feet per year

[1] *From Table 16.*

5.2 WATER SHORTAGE CONTINGENCY PLANNING

Requirement

#37. Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster (10632(c)).

To further prepare for water shortages, the City of Montebello (City) adopted Ordinance No. 2333 on July 22, 2009. Under this ordinance, Chapter 8.29 ("Water Conservation and Water Supply Shortage Program") was added to the Municipal Code, outlining stringent prohibitions and penalties that will be enforced following a water crisis, caused by prolonged drought or any other disasters. A water shortage will be identified as a Level 1, 2, or 3 depending on the severity of the crisis. The prohibitions and penalties have varying degrees of strictness that correspond to each of the water crisis levels.

Additionally, the ordinance mandates the implementation of several permanent water conservation practices at all times, even when there is no foreseeable threat of a water shortage. The permanent prohibitions will be continually in effect at all levels of water shortage declarations in addition to the prohibitions specific to each level. The City will determine when and at which level a water shortage declaration is necessary, and both customers and water purveyors that operate within the City will be required to abide by the provisions of Ordinance No. 2333.

Public hearings will be held prior to the declaration of each level to evaluate the extent of the water shortage and to inform customers about the water crisis. The mandatory requirements of Levels 1, 2, or 3 will be implemented on the tenth (10^{th}) day following the declaration of the water supply shortage. The City and water purveyors will print the declaration on community publications within five (5) days to inform the customers of the commencement of the prohibitions. If a water allocation becomes necessary, customers will be informed by mail at their individual billing address.

A water customer may request to be exempt from the provisions of the water conservation plan if he/she can provide documentation that such restrictions will cause unfair hardship on him/her. Within ten (10) days of submittal, the application will be reviewed by the City Engineer, who will then issue a final approval, conditional approval, or rejection of the request for exemption. The water customer may then file a written appeal to the City Council, who will then grant or deny the appeal.

Requirement

#38. Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning (10632(d)).

During a water shortage crisis, certain mandatory restrictions on water use will be imposed on the public in addition to the permanent prohibitions that are already enforced regardless of whether there is crisis or not. Levels 1 to 3 prohibitions will be progressively implemented according to the severity of the water crisis. Table 5-2 (DWR Table 36) lists the mandatory water conservation practices that correspond to each of the levels. Note that Level 1 prohibitions are similar to the permanent prohibitions, except that the time frames for certain activities are shorter at Level 1. For example, the leakages at service connections and other segments of the distribution system must be repaired within seven (7) days of notification from the City or the other water purveyors, but during a Level 1 and a Level 2 crisis, this time frame is shortened to seventy-two (72) and forty-eight (48) hours, respectively.

Table 5-2 (DWR Table 36)
Water shortage contingency — mandatory prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Using potable water for street washing	
Watering or irrigation of lawn, landscape, or other vegetated area with potable water between 10:00am and one (1) hour before sunset, except when a hand-held bucket or a hand-held hose with a self-closing shut-off nozzle is used	Permanent
Watering or irrigation of lawn, landscape, or other vegetated area with potable water with an unattended irrigation system for a maximum of only fifteen (15) minutes per day, except when a very low-flow drip type irrigation system, or weather-based controllers, or sprinklers with a 70% efficiency is used	Permanent
Excessive watering or irrigating of lawns, landscapes or other vegetated areas that causes runoff onto adjoining properties or paved areas, gutters, and ditches	Permanent
Washing paved surfaces, such as sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, except when it is necessary to prevent safety and health hazards, and with the use of hand-held bucket, hose with a self-closing water shut-off device, a water broom, or a high-pressure cleaning machine that recycles any water used	Permanent
Fix leaks, breaks, or other malfunctions in the water system, including the water customer's service connection and segments maintained by the water purveyor, within seven (7) days of receiving notice from the City	Permanent
Installation of water fountains and other decorative water features that do not utilize re-circulated water	Permanent
Using potable water for washing or cleaning any vehicle, except when a hand-held bucket or a hose with a self-closing water shut-off nozzle is used	Permanent
Install an on-site water recycling system at commercial vehicle washing facilities and commercial laundry facilities	Permanent
Establishments that sell food and drinks, such as restaurants, hotels, bars, cafes, etc., may only serve water to customers upon request	Permanent
Installation of single pass cooling systems in buildings in need of new water service	Permanent
Utilize water-conserving dish wash spray valves at food preparation establishments, such as restaurants and cafes	Permanent
Construction meters for landscape irrigation may not be used from 10:00am to one (1) hour before sunset	Permanent
Private swimming pools, spas, ponds, and artificial lakes may not be filled or refilled from 10:00am to one (1) hour before sunset, and covers need to be in place on pools and spas at least five (5) days a week, except when the facility is in use, to minimize evaporation	Permanent
Prohibition of filling and refilling decorative pond or lakes, except when such ponds or lakes are necessary to sustain aquatic life, and such aquatic life has a significant value and has been managed in the same ponds or lakes prior to the declaration of the water shortage	Level 2

Table 5-2 (DWR Table 36) - Continued
Water shortage contingency — mandatory prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Prohibition of filling and refilling more than one (1) foot in depth of residential pools and spas with potable water	Level 2
Prohibition of landscape irrigation, except when the landscape is necessary for fire protection, soil erosion control, protection of plants identified as rare or a protected species, or within public parks, playing fields, daycare centers, golf course greens and school grounds	Level 3
Prohibition of new potable water service, temporary or permanent, except when a valid, unexpired building permit has already been issued; the project is necessary for public health, safety, and welfare; or the City determines that the water demands of the project will be offset before the provision of the new water meter	Level 3
No new building permits will be issued for projects that will require new or additional water service, except when the project is necessary for public health, safety, and welfare; or the project meets water conservation requirements	Level 3
Water purveyors may be required by the City to discontinue service to any water customer, who is believed to be in constant violation of the water conservation plan	Level 3

Requirement

#39. Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply (10632(e)).

Consumption reduction methods are listed in Table 5-3 (DWR Table 37). The severity of the water shortage will influence which methods will be implemented. A Level 3 water shortage will target the execution of all consumption reduction methods. Water savings estimates are based on the amount of reduction needed at each stage of the water shortage. The permanent prohibitions are expected to reduce consumption by 5%. A Level 1 shortage will reduce supply by up to 10%, so a 10% reduction in consumption will be required. For a Level 2 shortage, between 10% and 20% of supply will be lost, so a consumption reduction of about 20% will be necessary. For Level 3, more than 20% of supply will be unavailable, and mandatory consumption reduction will have to be approximately 25%.

Table 5-3 (DWR Table 37)
Water shortage contingency — consumption reduction methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Encourage participation in water conservation programs	-	5%
Take advantage of rebates on water-efficient appliances	-	
Enforce Level 1 prohibitions and fines	1	10%
Enforce Level 2 prohibitions and fines	2	20%
Enforce Level 3 prohibitions and fines	3	25%

Requirement

#40. Penalties or charges for excessive use, where applicable (10632(f)).

The City enforces the fines and penalties on violations of the water shortage contingency plan.

Fines will be imposed on customers who fail to comply with the provisions of the City's "Water Conservation and Water Supply Shortage Program" as detailed in Chapter 8.29 of the Municipal Code through Ordinance No. 2333. All penalties and charges apply to each of the water shortage crisis levels. The fines and penalties are listed in Table 5-4 (DWR Table 38).

Table 5-4 (DWR Table 38)
Water shortage contingency — penalties and charges

Penalties or Charges	Stage When Penalty Takes	
Penalty for excess use		
Charge for excess use		
The City of Montebello may prosecute any violation as a misdemeanor, which may be subjected to imprisonment of up to thirty (30) days, or a fine of up to one thousand dollars ($1,000.00), or both.	Upon the City's discretion	Upon the City's discretion
The City of Montebello mails a copy of Ordinance No. 2333 via USPS mail and issues a written warning.	1 to 3	1st Violation
The non-compliant water customer gets a fine up to a maximum of one hundred dollars ($100.00).	1 to 3	2nd Violation
The non-compliant water customer gets a fine up to a maximum of two hundred fifty dollars ($250.00).	1 to 3	3rd Violation
The non-compliant water customer gets a fine up to a maximum of five hundred dollars ($500.00).	1 to 3	4th & Subsequent
In addition to fines, ML&WC may be required to install a flow restrictor device with capacity of one (1) gallon per minute for services up to one and one-half inch in size and larger restrictors for larger services. The flow restrictor will be in place for at least forty-eight (48) hours.	1 to 3	4th & Subsequent Violations
In addition to fines and flow restrictor, ML&WC may be required to discontinue the non-compliant customer's water service for repeated violations of mandatory restrictions.	1 to 3	4th & Subsequent Violations

A written Notice of Violation will be sent via United States Postal Service (USPS) first class mail or personal delivery to the non-compliant water customer at least ten days before penalties are imposed. The customer will then have the opportunity to contest the violation by submitting a written notice of appeal, and a hearing will be scheduled. Within ten days of the scheduled hearing, a written notice of the hearing will be sent to the water customer and to ML&WC via USPS first class mail.

Requirement

#41. An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments (10632(g)).

To illustrate the potential financial impact of a 10% to 50% reduction in water demand, total deliveries and production for 2010 have been used. Listed below are the assumptions made:

- Revenue is calculated using the average usage rates for the Low PSI Zone and the Booster Zone. For the Low PSI Zone, the rates are as follows: For single family residential and government - $1.69 per ccf for the first 20 ccf, $1.89 per ccf for 21 to 31 ccf, and $2.09 per Ccf for consumption greater than 32 ccf. All water usage is charged $2.02 per ccf for multi-family residential, commercial, an industrial customers. For the Booster Zone, the rates are $0.06 higher for all customers and

categories. The average usage charge, based on the rates, is $1.935 per ccf (Reference: Montebello Land & Water Company).

- Groundwater production is billed at a rate of $205 per acre-foot for APA, and at APA plus lease rates leased water. The total rate for leased water is $375 per acre-foot. Water Replenishment District will increase the Rate Assessment to $244 per acre-foot beginning July 1, 2011.
- The amount of water that is unaccounted for is the difference between the total well production, which is also decreased by the same percentage as the reduction in demand, and total demand. Unaccounted for water is due to system flushing, leaks, and the difference between the accuracies of the production and sales meters.
- Cost of operations and maintenance is not reduced because it is assumed to remain constant during the water shortage period.
- The water shortage is assumed to last one year.

Table 5-5 shows the total demand at each stage of reduction and the corresponding projected production. As demand falls due to a mandatory consumption reduction, the amount of groundwater production will also decrease. The total well production at every level of reduction is estimated to be the sum of the total potable water demand and water losses.

Table 5-5
Demand and Production Volumes at Each Reduction Stage

WATER VOLUMES (AFY)	BASELINE YEAR (2010)	With 10% Reduction	With 20% Reduction	With 25% Reduction	With 50% Reduction
Total Demand	**3,098**	**2,788**	**2,478**	**2,324**	**1,549**
Total Well Production	**3,373**	**3,006**	**2,672**	**2,505**	**1,670**
Expected Water Loss	**275**	**217**	**193**	**181**	**121**

Table 5-6 exemplifies that a significant drop in demand will cause the revenue to plummet as well. A profit shortfall, relative to the baseline year, of 5% can be expected at a 10% reduction, 10% at a 20% reduction, 13% at a 25% reduction, and 26% at a 50% reduction in demand.

Table 5-6
Revenue and Supply Costs at Each Demand Reduction Stage

	BASELINE YEAR (2010)	With 10% Reduction	With 20% Reduction	With 25% Reduction	With 50% Reduction
Revenue from Sales	**$ 2,634,893.89**	**$ 2,371,404.50**	**$ 2,107,915.11**	**$ 1,976,170.42**	**$ 1,317,446.95**
Cost of Supply	**$ 988,671.25**	**$ 851,057.13**	**$ 725,819.67**	**$ 663,200.94**	**$ 350,107.29**
Revenue minus Supply Cost	**$ 1,646,222.64**	**$ 1,520,347.38**	**$ 1,382,095.45**	**$ 1,312,969.48**	**$ 967,339.65**
diff compared to baseline		**$ (125,875.27)**	**$ (264,127.20)**	**$ (333,253.16)**	**$ (678,882.99)**
diff with baseline revenue		**-5%**	**-10%**	**-13%**	**-26%**

In the event that ML&WC's revenues and expenditures are gravely affected by a water shortage, the following measures are proposed to alleviate the financial impacts:

- Rate Adjustment
- Development of Reserves
- Decrease in Capital Expenditure
- Decrease in O&M Expenditure

These measures will somewhat alleviate the financial impacts of severe water shortages and drastic reduction in water sales. Negative consequences that will arise from the cost-cutting actions include dissatisfaction of customers, less funding for improvement projects and system maintenance, and reduced staff availability for

emergency response. At a 50% reduction in usage, ML&WC's APA will be sufficient to meet demand and additional leases may not be needed.

Requirement

#42. A draft water shortage contingency resolution or ordinance (10632(h)).

Enacted on July 22, 2009, through Ordinance No. 2333, Chapter 8.29 of the Municipal Code details the City's water shortage contingency plan. It contains general prohibitions, exceptions, means of water conservation at different levels of water shortage, penalties and charges for non-compliance, and hearing procedures for contesting violations. A copy of Ordinance No. 2333 is found in Appendix D.

5.3 WATER QUALITY

Requirement

#52. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability (10634).

Groundwater

Overall, groundwater quality in Central Basin is very good. However, there remains a threat of contamination from adjacent basins, seawater intrusion, and migration of shallow contaminants into the deeper aquifers. Low traces of manganese have been found at various locations throughout the Central Basin, but they remain below the allowable levels and are mitigated through blending. Other contaminants of concern include perchlorate, trichloroethylene (TCE), and perchloroethylene (PCE), which are all found in the San Gabriel Valley aquifer. Studies show these contaminants have been slowly migrating towards Central Basin since the 1980s. This prompted Central Basin Municipal Water District (CBWMD) to initiate the development of the Water Quality Protection Project (WQPP), which aims to contain the contaminants within the confines of San Gabriel Valley by extracting the tainted groundwater, treating it, and finally distributing the treated water to purveyors. WQPP is further discussed in Section 4.

In addition, the "San Gabriel Basin Restoration Fund" was established by Congress in 2001, and the San Gabriel Valley Water Quality Authority was consequently founded to take charge of cleaning up the perchlorate scattered all over the San Gabriel Groundwater Basin. As a result, firms in the defense industry that were found responsible for the perchlorate contamination in the 1950s and 1960s were compelled to pay $200 million for the construction of treatment facilities and various water quality projects to restore the San Gabriel Valley Groundwater Basin. This also prevents contaminants from migrating to Central Basin (Reference: CBWMD UWMP 2010).

The risk of seawater intrusion is mitigated by the Alamitos Barrier, which is situated at the southwest section of Central Basin. Groundwater wells throughout Central Basin are also regularly monitored and tested to ensure the high quality of groundwater being extracted from the wells. This also aids water purveyors, such as ML&WC, to intercept any potential water quality issues and promptly resolve them. More details on the Alamitos Barrier are discussed in Section 4.

Consequently, the quality of ML&WC's water deliveries exceeds primary and secondary drinking water standards. As shown in the 2010 Water Quality Report, all organic chemicals, inorganics, radioactivity,

microbials, disinfection by-products, lead, and copper levels fall within the allowable range of primary standards, and some are undetected. Currently, there are no known immediate threats to ML&WC's groundwater supply.

Reports on the quality of water that ML&WC delivers to its customers are made available annually. ML&WC's 2010 Water Quality Report is attached as Appendix E.

The projected impacts of water quality on ML&WC's supplies are quantified in Table 5-7 (DWR Table 30).

Table 5-7 (DWR Table 30)
Water quality – current and projected water supply impacts

Water source	Description of condition	2010	2015	2020	2025	2030	2035 - opt
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Units (circle one): acre-feet per year million gallons per year cubic feet per year

5.4 DROUGHT PLANNING

Requirement

#22. Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) an average water year, (B) a single dry water year, (C) multiple dry water years (10631(c)(1)).

Although the supply of groundwater has historically been adequate to meet the demands of customers, ML&WC remains vulnerable to water shortages due to the heavy reliance on groundwater and the limited rainfall typical of Southern California. Most of the groundwater in the Central Basin comes from surface inflow through Whitter Narrows, and only a small fraction of recharge is from local precipitation due to the impermeable material within the vicinity of the basin (Reference: Central Basin Watermaster Report, 2010). From 1998 to 2009, the average rainfall within the City is 13.1 inches.

Table 5-8 (DWR Table 27) lists the average, single-dry, and multiple-dry water years. Base years are selected based on recent annual rainfall. Average year is chosen to be 2005 since the rainfall for that year most closely resembles the City's average annual rainfall as shown on Figure 2-5. The single-dry year is chosen to be 2006 since only 3.45 inches of rainfall was measured that year. The driest 3-year period is determined to be 2006 to 2009, where the average rainfall was only 9.76 inches.

Table 5-8 (DWR Table 27)
Basis of water year data

Water Year Type	Base Year(s)
Average Water Year	2005
Single-Dry Water Year	2006
Multiple-Dry Water Years	2006-2009

As shown in Table 5-9 (DWR Table 28), groundwater production during dry years tends to be less than production during a normal year. However, this does not mean that supplies become inadequate during the dry years. The demands are still met because customers are encouraged to voluntarily reduce their water usage during dry periods. Table 3-1 shows that water consumption and production during the most recent dry years decreased. This demonstrates the success of the water conservation effort in avoiding a significant water shortage.

Table 5-9 (DWR Table 28)
Supply reliability — historic conditions

Average / Normal Water Year (2005)	Single Dry Water Year (2006)	Multiple Dry Water Years			
		2006	2007	2008	2009
3,666	3,544	3,544	3,686	3,648	3,538
Percent of Average/Normal Year:	96.7%	96.7%	100.6%	99.5%	96.5%

Units are in acre-feet per year.

Requirement

#35. Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage (10632(a)).

Under Ordinance No. 2333, the addition of "Water Conservation and Water Supply Shortage Program" to the City's Municipal Code identifies the water crisis stages and the different water conservations and prohibitions that correspond with each level. The prohibitions are listed in Table 5-2 (DWR Table 36). As shown in Table 5-10 (DWR Table 35), voluntary conservation is expected of the water customers since permanent water conservation practices will be implemented no matter what the current water supply is. All other levels require mandatory compliance with the conservation practices. A shortage of up to 10% in supply prompts Level 1. Level 2 occurs when a shortage of up to 20% is identified. Finally, a shortage of greater than 20% triggers the implementation of water conservation and prohibitions under Level 3. If supplies are reduced by 50%, all prohibitions listed in the "Water Conservation and Water Supply Shortage Program" will be strictly enforced, and penalties will be imposed accordingly.

Table 5-10 (DWR Table 35)
Water shortage contingency — rationing stages to address water supply shortages

Stage No.	Water Supply Conditions	% Shortage
Permanent	Voluntary	0 to 10%
Level 1	Mandatory	10%
Level 2	Mandatory	20%
Level 3	Mandatory	>20%

[1] *One of the stages of action must be designed to address a 50 percent reduction in water supply.*

Requirement

#36. An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply (10632(b)).

Supply reliability, based on current sources in 2010, is presented in Table 5-11 (DWR Table 31). Since ML&WC's water supply mix consists entirely of groundwater, the minimum water supply for the next three years is assumed to be similar to that in the recent driest years. In the first dry year (2011), the groundwater supply will be equal to 96.7% of the supply in the normal year (2010), 100.6% in the second dry year (2012) and 99.5% in the third dry year (2013).

Table 5-11 (DWR Table 31)
Supply reliability — current water sources

Water supply sources[1]	Average / Normal Water Year Supply[2] (2010)	Multiple Dry Water Year Supply[2]		
		Year 2011	Year 2012	Year 2013
Groundwater (Central Basin)	3,373	3,260	3,392	3,356
Percent of normal year:		96.7%	100.6%	99.5%

Units (circle one): *acre-feet per year* *million gallons per year* *cubic feet per year*

[1] *From Table 16.*

[2] *See Table 27 for basis of water type years.*

Requirement

#43. A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis 10632(i).

ML&WC implements monitoring mechanisms to track both water production and consumption to determine water savings and losses. These mechanisms are listed below:

- Readings of water meters
- Meter Exchange Program
- Leak Detection Program
- Meters installed at all connections in the system
- System Pressure Control Program
- Meter readings at inter-agency connections
- Water Quality Reports
- Recording of water production from the groundwater wells

Requirement

#53. Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier (10635(a)).

Normal year supply and demand projections are presented in Table 5-12 (DWR Table 32).

Table 5-12 (DWR Table 32) Supply and demand comparison — normal year					
	2015	2020	2025	2030	2035 - opt
Supply totals (from DWR Table 16)	3,631	3,664	3,698	3,722	3,765
Demand totals (From DWR Table 11)	3,612	3,646	3,679	3,703	3,746
Difference	19	19	19	19	19
Difference as % of Supply	0.5%	0.5%	0.5%	0.5%	0.5%
Difference as % of Demand	0.5%	0.5%	0.5%	0.5%	0.5%
Units are in acre-feet per year.					

The following assumptions are made to estimate supply and demand during a single dry year:

- The provisions of a Level 1 water shortage will be implemented, and customers will be subjected to a 10% consumption reduction. The potable water supply is decreased to 96.7% of the normal year water supply, according to the historic supply reliability conditions shown in Table 5-9 (DWR Table 28).
- The supply of recycled water will be the same as in a normal year.
- The amount of water losses in a single dry year will be equal to 7.8% of the potable water supply.

Supply and demand projections for a single dry year are presented in Table 5-13 (DWR Table 33).

Table 5-13 (DWR Table 33) Supply and demand comparison — single dry year					
	2015	2020	2025	2030	2035 - opt
Supply totals[1,2]	3,493	3,525	3,558	3,581	3,622
Demand totals[2,3,4]	3,277	3,308	3,338	3,360	3,399
Difference	216	218	220	221	224
Difference as % of Supply	6.2%	6.2%	6.2%	6.2%	6.2%
Difference as % of Demand	6.6%	6.6%	6.6%	6.6%	6.6%
Units are in acre-feet per year.					
[1] Consider the same sources as in Table 16. If new sources of water are planned, add a column to the table and specify the source, timing, and amount of water.					
[2] Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.					
[3] Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.					
[4] The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.					

The following assumptions are made to estimate supply and demand for a three-year multiple-dry year period:

- The first dry year is similar to a Level 1 single dry year, in which customers are required to reduce consumption by 10%. The potable water supply is decreased to 96.7% of the normal year water supply, according to the historic supply reliability conditions shown in Table 5-9 (DWR Table 28).
- The second dry year is considered a Level 2 water shortage, and a 20% reduction in consumption is made mandatory. The potable water supply is increased to 100.6% of the normal year water supply, according to the historic supply reliability conditions shown in Table 5-9 (DWR Table 28).
- The third dry year is considered a Level 3 water shortage, and a minimum of 25% consumption reduction is required. The potable water supply is decreased to 99.5% of the normal year water supply, according to the historic supply reliability conditions shown in Table 5-9 (DWR Table 28).

- The supply of recycled water will be the same as in a normal year.
- The amount of losses in each of the dry years will be equal to 7.8% of the potable water supply.
- Total demand is the sum of recycled water demand and potable water demand with conservation.

The projected supply and demand for the years 2010 to 2014, 2015 to 2019, 2020 to 2024, 2025 to 2029, 2030 to 2034, and 2035 to 2039 are presented in Tables 5-14, 5-15, 5-16, 5-17, 5-18, and 5-19, respectively. The first three years in the sequence represent the multiple dry year period, and the last two are normal years. Note that recycled water is not included in the supply and demand mix for 2010 and 2011 since the SWRP Phase 1, which will provide recycled water to ML&WC's service area, is currently still non-operational.

Table 5-14
Projected Supply and Demand for a Multiple Dry Year Period Beginning 2010

Year	2010	2011	2012	2013	2014
Climate Condition	Dry	Dry	Dry	Normal	Normal
Potable Water Supply (AFY)	3,260	3,392	3,356	3,373	3,373
Losses (AFY)	(254)	(265)	(262)	(263)	(263)
Recycled Water Supply (AFY)	0	0	18.5	18.5	18.5
Total Supply (AFY)	3,006	3,127	3,113	3,128	3,128
Potable Water Demand (AFY)	3,098	3,149	3,199	3,250	3,300
Conservation (AFY)	(310)	(630)	(800)	0	0
Demand with Conservation (AFY)	2,788	2,519	2,399	3,250	3,300
Recycled Water Demand (AFY)	0	0	18.5	18.5	18.5
Total Demand (AFY)	2,788	2,519	2,418	3,268	3,319

Table 5-15
Projected Supply and Demand for a Multiple Dry Year Period Beginning 2015

Year	2015	2016	2017	2018	2019
Climate Condition	Dry	Dry	Dry	Normal	Normal
Potable Water Supply (AFY)	3,492	3,633	3,595	3,612	3,612
Losses (AFY)	(272)	(283)	(280)	(282)	(282)
Recycled Water Supply (AFY)	18.5	18.5	18.5	18.5	18.5
Total Supply (AFY)	3,238	3,368	3,333	3,349	3,349
Potable Water Demand (AFY)	3,351	3,357	3,363	3,370	3,376
Conservation (AFY)	(335)	(671)	(841)	0	0
Demand with Conservation (AFY)	3,016	2,686	2,523	3,370	3,376
Recycled Water Demand (AFY)	18.5	18.5	18.5	18.5	18.5
Total Demand (AFY)	3,034	2,704	2,541	3,388	3,394

Table 5-16
Projected Supply and Demand for a Multiple Dry Year Period Beginning 2020

Year	2020	2021	2022	2023	2024
Climate Condition	Dry	Dry	Dry	Normal	Normal
Potable Water Supply (AFY)	3,525	3,666	3,628	3,646	3,646
Losses (AFY)	(275)	(286)	(283)	(284)	(284)
Recycled Water Supply (AFY)	18.5	18.5	18.5	18.5	18.5
Total Supply (AFY)	3,268	3,399	3,364	3,380	3,380
Potable Water Demand (AFY)	3,382	3,388	3,394	3,401	3,407
Conservation (AFY)	(338)	(678)	(849)	0	0
Demand with Conservation (AFY)	3,044	2,711	2,546	3,401	3,407
Recycled Water Demand (AFY)	18.5	18.5	18.5	18.5	18.5
Total Demand (AFY)	3,062	2,729	2,564	3,419	3,425

Table 5-17
Projected Supply and Demand for a Multiple Dry Year Period Beginning 2025

Year	2025	2026	2027	2028	2029
Climate Condition	Dry	Dry	Dry	Normal	Normal
Potable Water Supply (AFY)	3,557	3,700	3,661	3,679	3,679
Losses (AFY)	(277)	(289)	(286)	(287)	(287)
Recycled Water Supply (AFY)	18.5	18.5	18.5	18.5	18.5
Total Supply (AFY)	3,298	3,430	3,394	3,411	3,411
Potable Water Demand (AFY)	3,413	3,417	3,421	3,426	3,430
Conservation (AFY)	(341)	(683)	(855)	0	0
Demand with Conservation (AFY)	3,072	2,734	2,566	3,426	3,430
Recycled Water Demand (AFY)	18.5	18.5	18.5	18.5	18.5
Total Demand (AFY)	3,090	2,752	2,585	3,444	3,448

Table 5-18
Projected Supply and Demand for a Multiple Dry Year Period Beginning 2030

Year	2030	2031	2032	2033	2034
Climate Condition	Dry	Dry	Dry	Normal	Normal
Potable Water Supply (AFY)	3,580	3,724	3,685	3,703	3,703
Losses (AFY)	(279)	(290)	(287)	(289)	(289)
Recycled Water Supply (AFY)	18.5	18.5	18.5	18.5	18.5
Total Supply (AFY)	3,319	3,452	3,416	3,433	3,433
Potable Water Demand (AFY)	3,434	3,442	3,450	3,459	3,467
Conservation (AFY)	(343)	(688)	(863)	0	0
Demand with Conservation (AFY)	3,091	2,754	2,588	3,459	3,467
Recycled Water Demand (AFY)	18.5	18.5	18.5	18.5	18.5
Total Demand (AFY)	3,109	2,772	2,606	3,477	3,485

Table 5-19
Projected Supply and Demand for a Multiple Dry Year Period Beginning 2035

Year	2035	2036	2037	2038	2039
Climate Condition	Dry	Dry	Dry	Normal	Normal
Potable Water Supply (AFY)	3,621	3,767	3,728	3,746	3,746
Losses (AFY)	(282)	(294)	(291)	(292)	(292)
Recycled Water Supply (AFY)	18.5	18.5	18.5	18.5	18.5
Total Supply (AFY)	3,357	3,492	3,456	3,472	3,472
Potable Water Demand (AFY)	3,475	3,483	3,491	3,500	3,508
Conservation (AFY)	(348)	(697)	(873)	0	0
Demand with Conservation (AFY)	3,128	2,787	2,619	3,500	3,508
Recycled Water Demand (AFY)	18.5	18.5	18.5	18.5	18.5
Total Demand (AFY)	3,146	2,805	2,637	3,518	3,526

A summary of the supply and demand for the multiple dry years period are presented in Table 5-20 (DWR Table 34). It also shows the surplus water as a percentage of supply and demand. In the first year of the multiple-dry period, a water savings of 740 AFY can be expected. The water savings increase to about 1,072 AFY in the second year and to 2,491 AFY in the third year. Based on the following comparison, it can be concluded that meeting the customers' demands, even during dry years, is feasible. However, the public's cooperation in water conservation will be vital in attaining this goal.

Table 5-20 (DWR Table 34)
Supply and demand comparison — multiple dry-year events

		2015	2020	2025	2030	2035 - opt
Multiple-dry year first year supply	Supply totals[1,2]	3,238	3,268	3,298	3,319	3,357
	Demand totals[2,3,4]	3,034	3,062	3,090	3,109	3,146
	Difference	204	206	208	210	211
	Difference as % of Supply	6.3%	6.3%	6.3%	6.3%	6.3%
	Difference as % of Demand	6.7%	6.7%	6.7%	6.8%	6.7%
Multiple-dry year second year supply	Supply totals[1,2]	3,368	3,399	3,430	3,452	3,492
	Demand totals[2,3,4]	2,704	2,729	2,752	2,772	2,805
	Difference	664	670	678	680	687
	Difference as % of Supply	19.7%	19.7%	19.8%	19.7%	19.7%
	Difference as % of Demand	24.5%	24.5%	24.6%	24.5%	24.5%
Multiple-dry year third year supply	Supply totals[1,2]	3,333	3,364	3,394	3,416	3,456
	Demand totals[2,3,4]	2,541	2,564	2,585	2,606	2,637
	Difference	792	799	810	810	818
	Difference as % of Supply	23.8%	23.8%	23.9%	23.7%	23.7%
	Difference as % of Demand	31.2%	31.2%	31.3%	31.1%	31.0%

Units are in acre-feet per year.

[1] *Consider the same sources as in Table 16. If new sources of water are planned, add a column to the table and specify the source, timing, and amount of water.*

[2] *Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.*

[3] *Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.*

[4] *The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.*